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U. S. DEPARTMENT OF AGRICULTURE ★ SOIL CONSERVATION SERVICE

# WATER SUPPLY OUTLOOK FOR MONTANA

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS  
Collaborating with  
MONTANA AGRICULTURAL EXPERIMENT STATION

AS OF  
APR. 1, 1978



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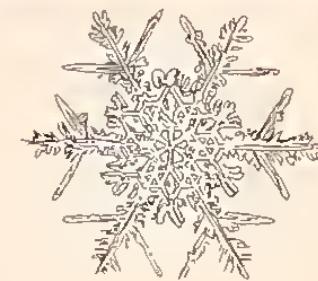
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## Montana Water Supply Outlook



### MOUNTAIN SNOWPACK

THE MOUNTAIN SNOWPACK IS  
GENERALLY NEAR OR ABOVE AVERAGE.  
ALL AREAS SHOWED VERY SMALL  
SNOWFALL AMOUNTS DURING MARCH.  
MANY LOW ELEVATIONS RECORDED  
SUBSTANTIAL MELT FOR THIS EARLY  
IN THE SEASON.

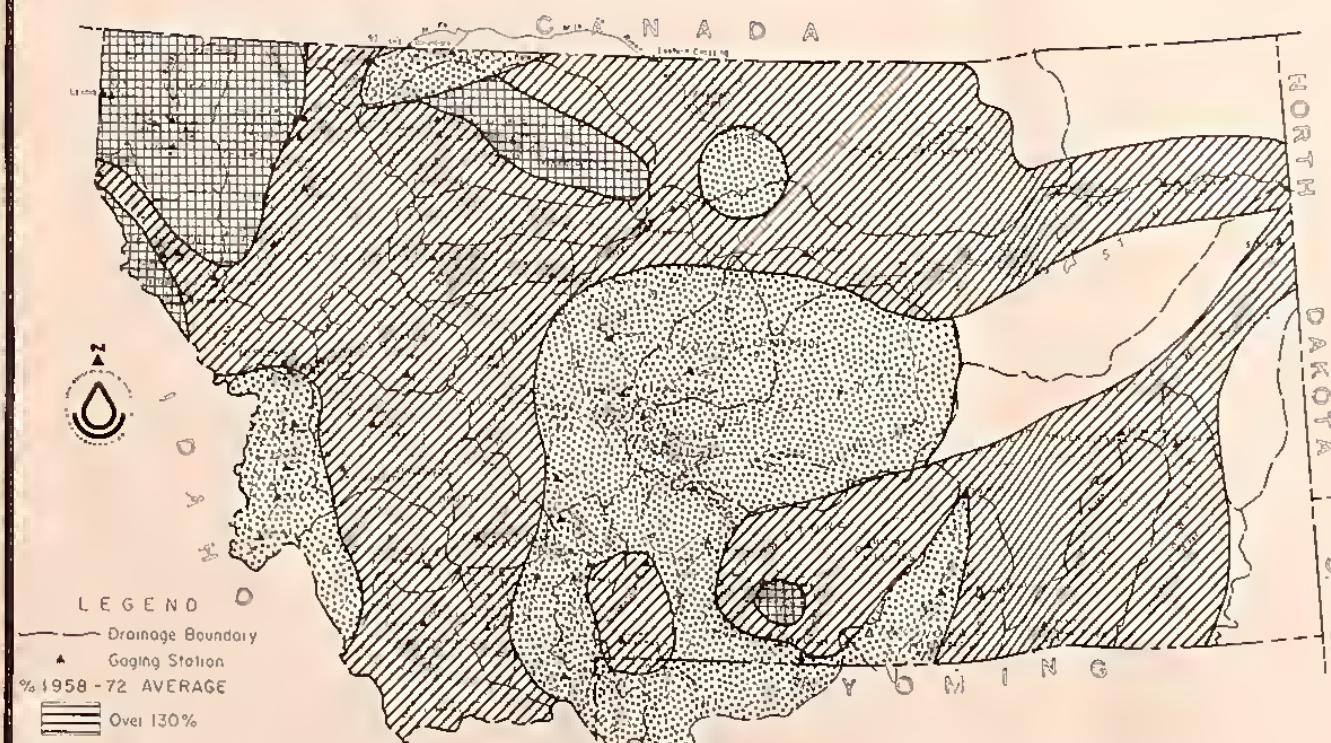
AREAS REPORTING LOW SNOW-  
PACK ARE PORTIONS OF THE BEAVER-  
HEAD RIVER DRAINAGE IN SOUTHWEST  
MONTANA, PORTIONS OF THE STILL-  
WATER RIVER AND RED LODGE-ROCK  
CREEK DRAINAGES NEAR RED LODGE  
AND MOST OF NORTHWEST MONTANA.  
ABOVE AVERAGE SNOWPACK WAS

MEASURED IN THE SOUTHERN PART OF  
THE BITTERROOT RIVER DRAINAGE,  
HEADWATERS OF THE BIG HOLE RIVER,  
MOST OF THE MADISON RIVER DRAIN-  
AGES, AND THE UPPER PORTIONS OF  
THE YELLOWSTONE RIVER DRAINAGE.  
ALL OF THE SMALLER MOUNTAIN  
RANGES IN CENTRAL MONTANA ALSO  
REPORT ABOVE AVERAGE AMOUNTS OF  
WATER STORED IN THE SNOWPACK.

ABOVE NORMAL TEMPERATURES  
THE LAST TWO WEEKS OF MARCH HAVE  
MELTED MOST OF THE HEAVY PRAIRIE  
SNOWPACK ACCORDING TO REPORTS  
FROM COOPERATORS.



### STREAMFLOW FORECAST



PROSPECTIVE STREAMFLOW FORECASTS  
AS OF  
April 1, 1978

SCALE IN MILES

THE TOTAL RUNOFF FROM  
APRIL THROUGH SEPTEMBER IS FORE-  
CAST TO BE NEAR AVERAGE OVER  
MUCH OF MONTANA. BELOW AVERAGE  
RUNOFF IS EXPECTED FROM LOWER  
SNOWPACK AREAS.

IN THE COLUMBIA RIVER  
DRAINAGE ALL STREAMS IN THE  
KOOTENAI RIVER SYSTEM, WESTERN  
PARTS OF THE FLATHEAD RIVER  
BASIN AND STREAMS FLOWING INTO  
THE LOWER REACHES OF THE CLARK  
FORK.

THE EXTREME HEADWATERS  
OF THE BEAVERHEAD RIVER AND THE  
LOWER PORTION OF THE MARIAS  
RIVER IN THE MISSOURI RIVER  
DRAINAGE ARE ALSO FORECAST TO  
HAVE BELOW AVERAGE RUNOFF.

IN THE YELLOWSTONE RIVER  
DRAINAGE, A LOW VOLUME OF INFLOW  
TO COONEY RESERVOIR IS FORECAST.  
ABOVE AVERAGE STREAMFLOW IS  
EXPECTED FOR MOST STREAMS FLOWING  
INTO THE BITTERROOT RIVER WEST OF  
THE DIVIDE. MISSOURI RIVER  
STREAM SYSTEMS PREDICTED TO HAVE  
ABOVE AVERAGE RUNOFF ARE THE  
MADISON AND GALLATIN RIVERS,  
UPPER PORTIONS OF THE MILK RIVER  
AND ALL STREAMS DRAINING CENTRAL  
MOUNTAIN RANGES.

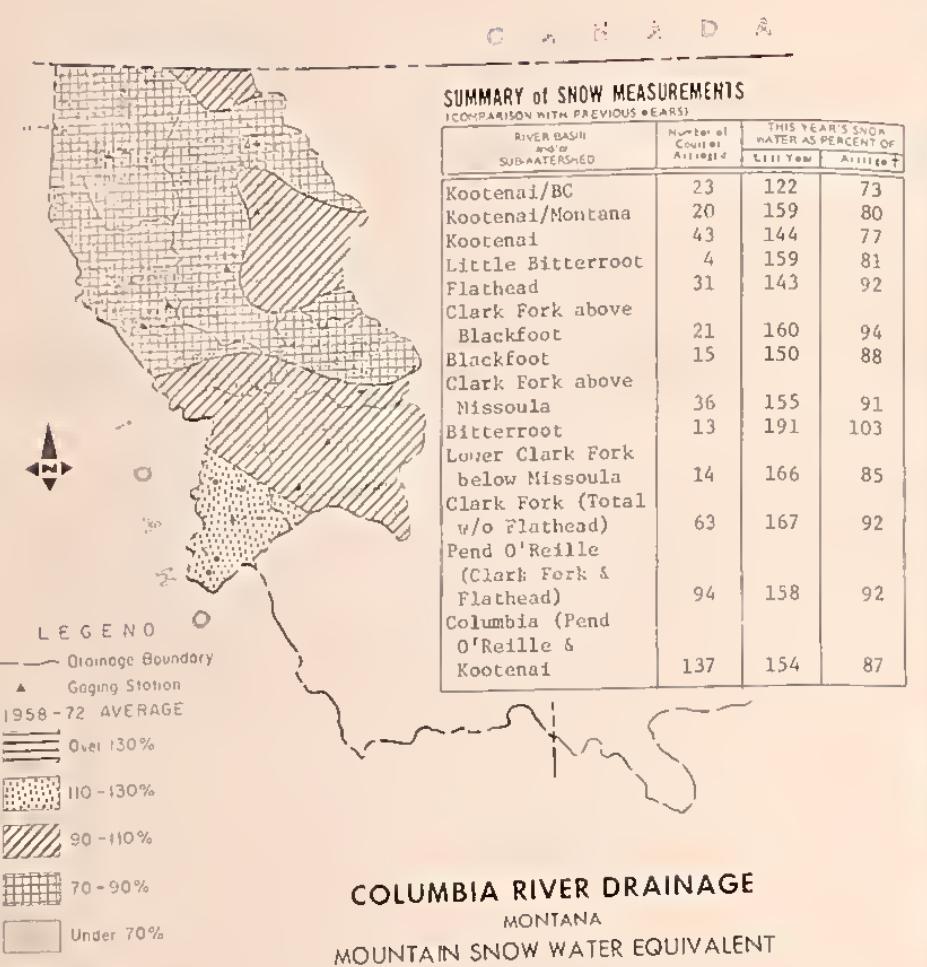
MOST STREAMS ENTERING THE  
YELLOWSTONE RIVER UPSTREAM FROM  
BILLINGS ARE EXPECTED TO HAVE  
ABOVE AVERAGE RUNOFF.

IRRIGATION WATER SUPPLIES  
ARE EXPECTED TO BE AVERAGE OR  
ABOVE IN MOST AREAS UNLESS THE  
ABOVE NORMAL TEMPERATURES AND  
BELOW NORMAL PRECIPITATION TREND  
CONTINUES.



# Columbia River Drainage

## SNOW SURVEYS



### MOUNTAIN SNOWPACK

KOOTENAI - BELOW AVERAGE IN MOST AREAS OF MONTANA AND IN BRITISH COLUMBIA. CONSIDERABLE MELT IN LOWER ELEVATIONS DURING MARCH. BELOW AVERAGE SNOWFALL IN HIGHER ELEVATIONS LAST MONTH.

FLATHEAD - BELOW AVERAGE IN WESTERN AREAS AND PARTS OF THE MIDDLE FORK. HIGHER ELEVATION SNOWPACK GENERALLY NEAR AVERAGE IN THE SWAN AND MONTAIN RANGES. SIGNIFICANT MELT IN LOWER ELEVATIONS LAST MONTH. SNOWFALL DURING MARCH WAS WELL BELOW AVERAGE.

BLACKFOOT - BELOW AVERAGE OVER MUCH OF THE DRAINAGE, PRIMARILY AS A RESULT OF LOW MARCH PRECIPITATION AND EARLIER THAN NORMAL MELT IN LOWER ELEVATIONS.

UPPER CLARK FORK - NEAR AVERAGE

IN MOST AREAS IN UPPER ELEVATIONS, SOME AREAS NEAR BUTTE CONTINUE TO SHOW LOWER THAN AVERAGE SNOWPACK. MELT AT LOWER ELEVATIONS HAS DECREASED THE SNOWPACK TO BELOW AVERAGE LEVELS. LITTLE SNOWFALL DURING MARCH.

BITTERROOT - NOT AS HIGH PERCENTAGE OF SNOW COVER AS A MONTH AGO, BUT STILL ABOVE AVERAGE IN SOUTHERN HALF OF THE DRAINAGE. VERY LITTLE INCREASE IN SNOW WATER STORAGE DURING THE PAST MONTH WITH CONSIDERABLE MELT AT LOWER ELEVATIONS.

LOWER CLARK FORK - HIGH ELEVATION SNOWPACK HAS ABOUT THE SAME WATER CONTENT AS MEASURED ON MARCH 1. CONSIDERABLE MELT IN LOWER ELEVATIONS. OVERALL SNOWPACK IS BELOW AVERAGE.

### SOIL MOISTURE

SOIL MOISTURE LEVELS HAVE INCREASED WITH RECENT SNOW MELT. MEDIUM ELEVATION SOILS ARE NEAR FIELD CAPACITY WHILE LOWER ELEVATION SOILS ARE DRYING.

### COLUMBIA RIVER DRAINAGE MONTANA MOUNTAIN SNOW WATER EQUIVALENT



### STREAMFLOW FORECASTS

KOOTENAI - SEASONAL VOLUMES ARE ABOUT 15 TO 20 PERCENT BELOW AVERAGE.  
FLATHEAD - A LITTLE BELOW AVERAGE ON MOST TRIBUTARIES, LESS THAN AVERAGE FROM STREAMS WITH LOWER ELEVATION HEADWATERS AND THOSE IN THE WESTERN PART OF THE BASIN.  
BLACKFOOT - NEAR TO A LITTLE BELOW AVERAGE FOR MOST TRIBUTARIES.  
UPPER CLARK FORK - MOST STREAMS NEAR AVERAGE EXCEPT FOR A

LITTLE BELOW AVERAGE FOR THOSE NEAR BUTTE AND ANACONDA.  
BITTERROOT - ABOVE AVERAGE IN SOUTHERN PART OF THE DRAINAGE, DECREASING SOMEWHAT FOR THE MORE NORTHERN TRIBUTARIES.  
LOWER CLARK FORK - ABOUT AVERAGE RUNOFF IN THE CLARK FORK RIVER, BELOW AVERAGE INFLOW FROM THE SMALLER TRIBUTARY STREAMS BELOW MISSOULA.

STREAM AREA	WATER SUPPLY OUTLOOK	
	SPRING FORECAST	LATE SEASON
Tobacco	Avg	Fair
Little Bitterroot	Avg	Fair
Mission Valley	Avg	Avg
Flint Creek	Avg	Avg
Upper Clark Fork	Avg	Avg
Nevada Creek	Avg	Avg
Blackfoot	Avg	Avg
West-side Bitterroot	Ex	Ex
East-side Bitterroot	Ex	Avg
Bitterroot River	Ex	Ex
Lower Clark Fork	Avg	Avg

### IRRIGATION WATER SUPPLIES

MOST STREAMS SHOULD HAVE ABOUT AVERAGE LATE SEASON SUPPLIES EXCEPT FOR ABOVE AVERAGE IN THE BITTERROOT RIVER. ALL STREAMS SHOULD HAVE ADEQUATE EARLY SEASON SUPPLIES. MOST IRRIGATION RESERVOIRS SHOULD FILL WITH SPRING RUNOFF.

### BASIN STREAM NO. 9 FORECAST POINT

STREAM NO. 9	THIS YEAR FORECAST	PAST RECORD	April-September			April-July			April-June			
			THOUSAND ACRE FEET									
KOOTENAI RIVER below Libby Dam (1)	6,250	84	3,976	7,456	5,300	83	3,043	6,417	4,150	83	2,469	5,011
FISHER RIVER near Libby	248	87		286	235	87		269				
YAAK RIVER near Troy	465	82		568	440	81		544				
KOOTENAI RIVER at Leonia (1)	7,600	84	4,910	9,073	6,680	84	3,844	7,957	5,400	84	3,050	6,431
INFLOW NOLTON RESERVOIR or Butte (million gallons)	202	92	103	220								
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	46.8	92	16.0	50.9	37.5	90	14.0	41.8				
FLINT CREEK near Southern Cross (3)	17.0	101	9.0	16.9	14.5	101	7.0	14.3				
FLINT CREEK below Boulder Creek (4)	69.0	96		71.6	54.6	97		56.1				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	15.0	93	3.4	16.2	14.2	92	2.9	15.4				
MIDDLE FORK ROCK CREEK near Philipsburg	83.0	109		75.9	75.5	110		68.6				
NEVADA CREEK near Finn	20.0	93		21.6	18.5	92		20.1				
BLACKFOOT RIVER near Bonner	1,000	97	1,031	900	96		934	780	96		814	
CLARK FORK RIVER above Milltown (7)	800	101		792	710	103		690	610	103		590
CLARK FORK RIVER above Missoula	1,800	99	573	1,823	1,610	99	473	1,624	1,390	99	408	1,404
WEST FORK BITTERROOT RIVER near Conner (7)	210	122		172	195	125		156				
BITTERROOT RIVER near Osby	675	116	242	584	630	116	204	542	555	116	176	479
SKALKAHO CREEK near Hamilton	63.0	111		56.6	55.5	112		49.6				
BURNT FORK CREEK near Stevensville (8)	39.2	111		35.3	34.5	111		31.0				
BITTERROOT RIVER at Missoula (9)	1,680	110		1,527	1,570	111		1,412	1,360	110		1,236
CLARK FORK RIVER below Missoula	3,480	104		3,350	3,180	105		3,036	2,750	104		2,640
CLARK FORK RIVER at St. Regis (NWS)	4,390	97	1,507	4,507	3,980	97	1,286	4,087	3,460	97	1,133	3,563
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,770	89		1,991	1,600	88		1,813	1,370	88		1,551
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,790	93	1,011	1,917	1,660	94	874	1,768	1,420	94	779	1,514
SOUTH FORK FLATHEAD RIVER near Columbia Falls	2,330	98	1,255	2,378	2,180	97	1,143	2,240	1,920	97	1,059	1,984
FLATHEAD RIVER at Columbia Falls (10)	6,000	93	3,180	6,421	5,600	94	2,809	5,942	4,850	94	2,547	5,151
SWAN RIVER near Big Fork	695	97		717	615	98		630				
FLATHEAD RIVER near Polson (11)	7,180	94	3,600	7,648	6,685	94	3,165	7,082	5,700	93	2,871	6,113
CLARK FORK RIVER near Plains (11)(NWS)	11,700	93	5,237	12,601	10,700	93	4,541	11,523	9,240	93	4,072	9,934
THOMPSON RIVER near Thompson Falls	245	88		277	220	89		248				
PROSPECT CREEK at Thompson Falls	126	86		147	117	85		137				
CLARK FORK RIVER at Whitehorse Rapids (12)(NWS)	12,900	92		14,090	11,800	92		12,860	10,200	92		11,092

- Adjusted for storage in Lake Koocanusa.
- Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
- Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
- Sum Flint Creek at Maxville and Boulder Creek at Maxville.
- Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
- Difference in observed flow Clark Fork above Missoula and
- Blackfoot near Bonner.
- Adjusted for storage in Painted Rocks Reservoir.
- Adjusted for diversion into Sunset Highline Canal.
- Difference in observed flow Clark Fork above and below Missoula.
- Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
- Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.
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- Difference in observed flow Clark Fork above Missoula and

(NWS) National Weather Service forecast.

Average based on 1958-72 period.

DRAINAGE BASIN AND SNOW COURSE NAME	ELEVATION	THIS YEAR		PAST RECORD	
DATE OF SURVEY	SNOW DEPTH (INCHES)	WEAR CONTENT (INCHES)	WEAR CONTENT (INCHES)		

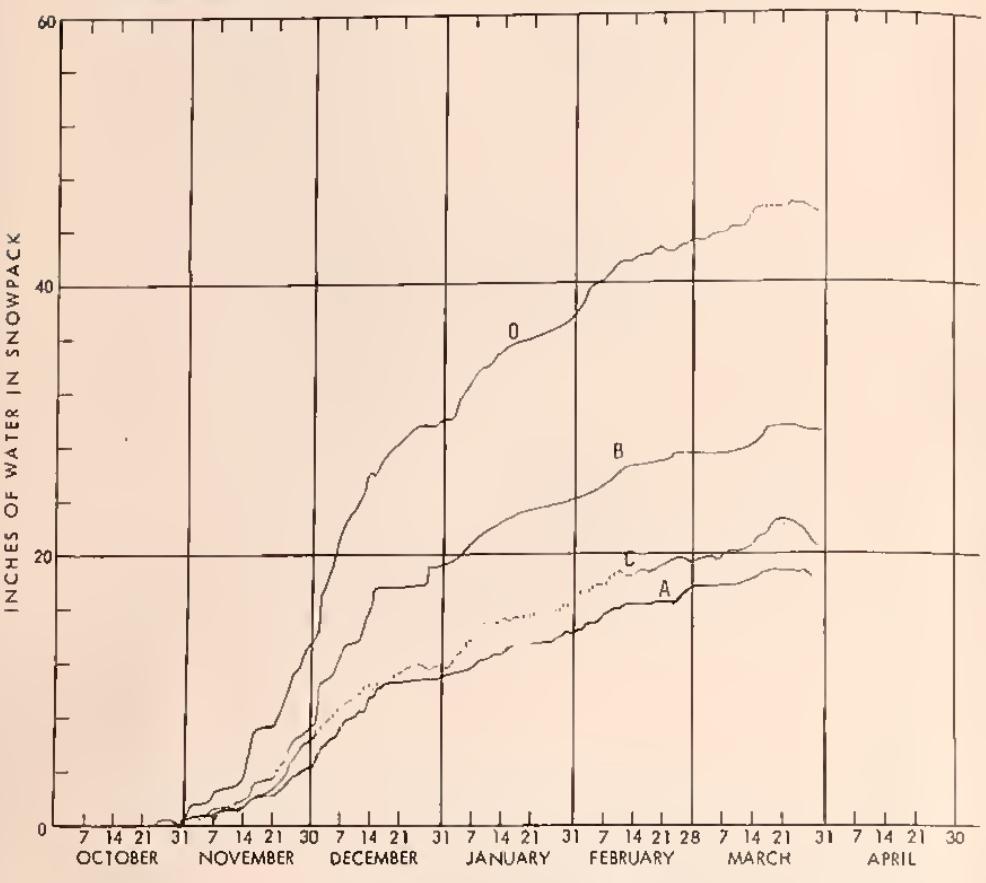

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# SNOW SURVEYS

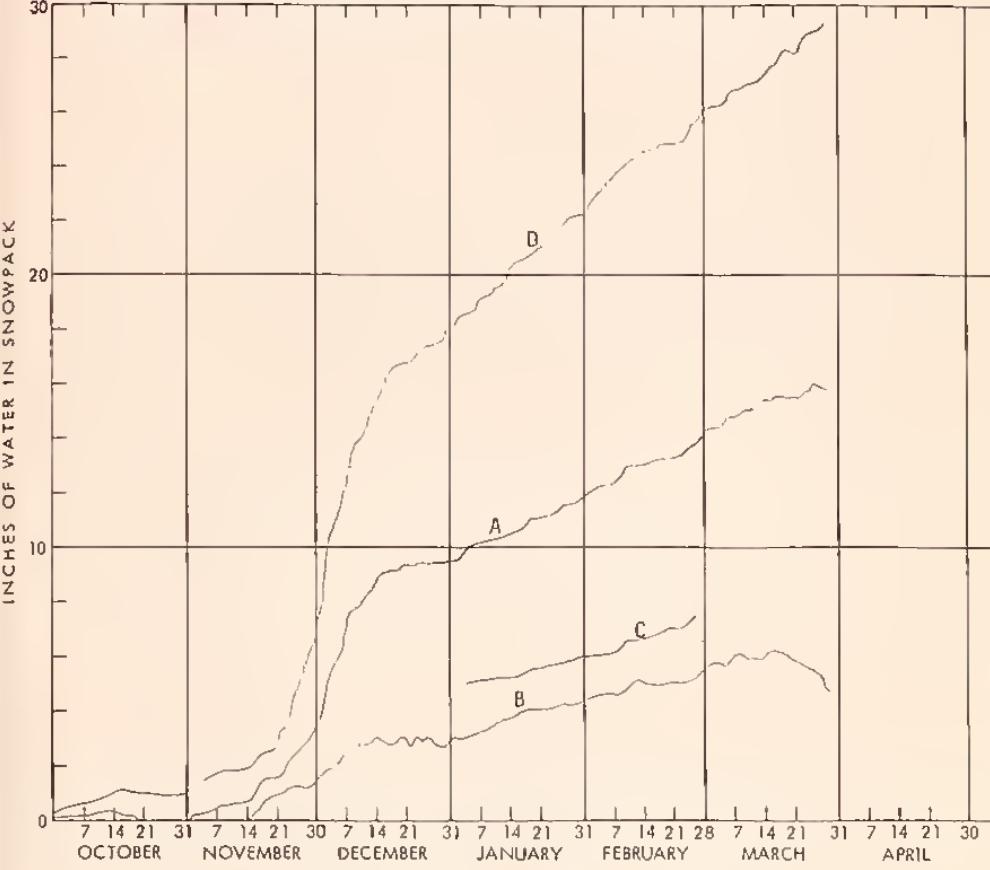
## BITTERROOT-BIG HOLE RIVERS

A Nez Perce Camp - elevation 5,650 ft., in West Fork Bitterroot River drainage near Nez Perce Pass southwest of Darby.  
 B Saddle Mountain - elevation 7,900 ft., in East Fork Bitterroot River drainage near Lost Trail Pass southeast of Darby and west of Wisdom.  
 C Twelvemile Creek - elevation 5,600 ft., in Lost Horse Creek drainage southwest of Hamilton.  
 D Twin Lakes - elevation 6,400 ft., in Lost Horse Creek drainage southwest of Hamilton.



## CLARK FORK-BITTERROOT RIVERS

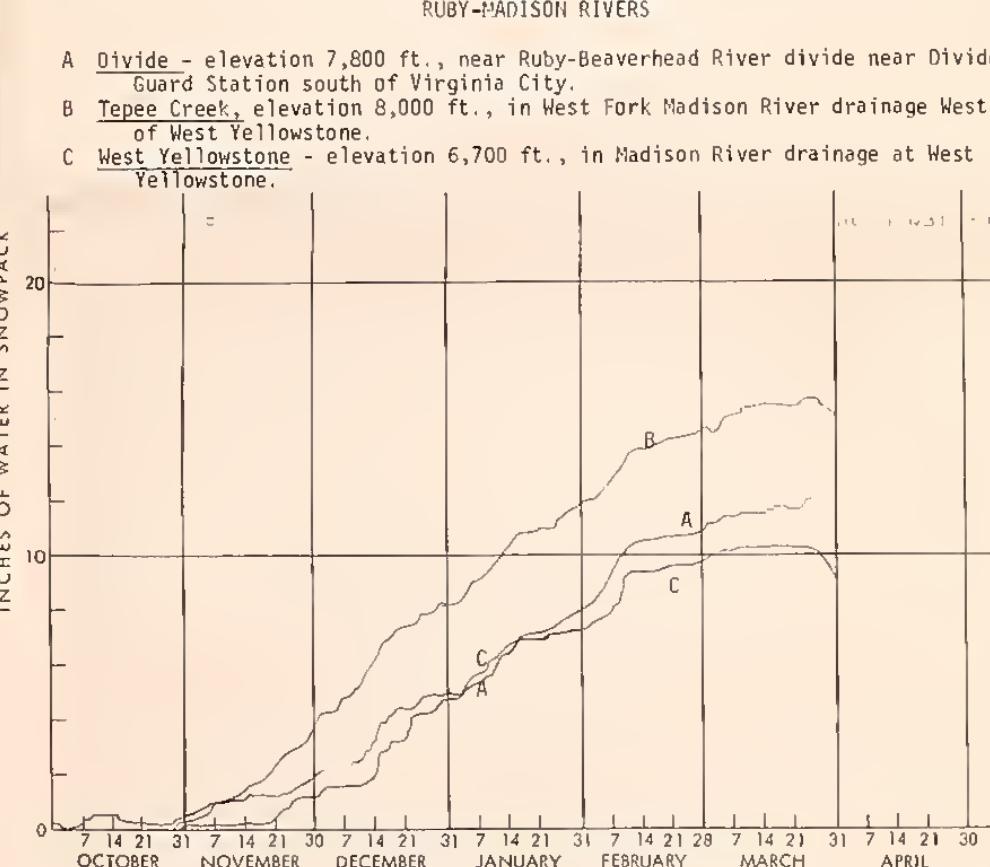
A Black Pine - elevation 7,100 ft., in Lower Willow Creek drainage near Black Pine Lookout northwest of Philipsburg.  
 B Combination - elevation 5,600 ft., in Lower Willow Creek drainage northwest of Philipsburg.  
 C Peterson Meadows - elevation 7,200 ft., in Flint Creek drainage south of Georgetown Lake. USFS-SCS cooperative site.  
 D Skalkaho Summit - elevation 7,250 ft., on Bitterroot-Rock Creek divide near Skalkaho Pass south of Philipsburg and west of Hamilton.



DRAINAGE BASIN and/or SNOW COURSE	NAME	Elevation	THIS YEAR		PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
CANYON (WY)	7750	4/01	47	18.2	7.2	16.5
CARRUT BASIN	9000	3/30	81	36.0	17.5	58.1
CARROT BASIN PILLOW	9000	3/30	SP	30.4	14.9	28.6
CEDAR GROVE	4100	3/31	28	11.7	7.1	12.7
CHATEAU LAWN #6 (AL)	5700	3/30	29	8.5	-	11.1
CHESSMAN RESERVOIR	6200	3/29	11	3.5	3.2	3.3
CHICKEN CREEK	4060	3/28	29	15.0	10.4	-
CLOVER MEADOW	8600	3/26	55	18.8	15.0	18.7
COLE CREEK	7850	3/30	38	10.8	13.4	-
COPBINATION	5600	3/29	18	5.2	3.5	8.1
COMBINATION PILLOW	5600	3/29	SP	4.8	4.9	-
COKE STATION	8150	3/31	65	27.6	12.4	20.5
COPPER BOTTOM	5200	3/31	21	7.4	5.7	11.8
COPPER BOTTOM PILLOW	5200	3/31	SP	11.5	7.6	-
COPPER CAMP	6950	3/31	66	29.8	15.4	35.6
COPPER CREEK	5700	3/31	29	19.9	6.0	16.3
COPPER LAKE CREEK	6100	3/31	52	23.0	11.6	25.7
COPPER MOUNTAIN	7700	3/30	30	10.8	7.9	12.3
COTTONWOOD CREEK	6400	4/03	24	7.2	6.5	-
COYOTE HILL	4200	3/29	25	9.3	9.7	10.5
CREVICE MOUNTAIN	8400	3/30	44	15.5	8.0	10.6
CRYSTAL LAKE	6100	3/24	48	17.7	21.6	14.5
DAU CREEK LAKE	6400	3/26	39	12.1	7.7	15.3
DAISY PEAK	7600	3/30	36	14.0	9.9	11.6
DALY CREEK	5780	3/28	31	10.1	7.6	-
DARKHORSE LAKE	8600	3/26	80	32.8	13.6	28.0
DAVIS CREEK	5400	3/28	49	22.5	13.6	26.5
DEANOM CREEK	6450	3/30	36	15.6	13.4	12.7
DEANOM CREEK PILLOW	6450	3/30	SP	14.4	12.1	11.0
DESERT MOUNTAIN	5600	3/30	33	13.1	11.7	17.2
DEVILS SLUE	8100	3/29	64	23.8	19.4	24.7
DISCOVERY BASIN	7050	3/27	26	9.5	8.0	-
DIVIOE	7800	3/26	37	12.2	5.4	11.6
DIVIOE PILLOW	7800	3/26	SP	12.0	6.8	-
EAGLE CREEK	7000	3/31	45	18.2	15.6	14.9
EAST BOULDER S	9250	4/03	87	36.5A	23.5	-
EAST FORK R.S.	5400	3/26	9	2.8	2.9	6.7
EL DORADO MINE	7800	3/27	62	23.6	12.3	23.1
ELK HORN SPRINGS	7600	3/26	38	13.8	5.6	9.7
ELK PEAK	8000	3/27	60	22.5	17.4	19.2
EMERY CREEK	4350	3/30	29	11.3	11.9	-
EMERY CREEK PILLOW	4350	3/30	SP	11.9	11.7	-

Average based on 1958-72 period. A - Aerial observation; water content estimated.  
 SP - Snow Pillow observation; water content only.

DRAINAGE BASIN and/or SNOW COURSE	NAME	Elevation	THIS YEAR		PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
RUBY-MADISON RIVERS						
A Divide	- elevation 7,800 ft., near Ruby-Beaverhead River divide near Divide Guard Station south of Virginia City.					
B Tepee Creek	- elevation 8,000 ft., in West Fork Madison River drainage West of West Yellowstone.					
C West Yellowstone	- elevation 6,700 ft., in Madison River drainage at West Yellowstone.					



## AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

### GOVERNMENT AGENCIES

**Canada**  
 Water Survey of Canada, Calgary, Department of the Environment  
 Water Resources Service, Department of Lands, Forests and Water Resources, British Columbia  
 Alberta Environment, Edmonton, Alberta

**Federal**  
 Department of the Army - Corps of Engineers  
 Department of Agriculture - Forest Service  
 - Soil Conservation Service  
 Department of Commerce - NOAA  
 - National Weather Service  
 - Bonneville Power Administration  
 - Bureau of Indian Affairs  
 - Bureau of Reclamation  
 - Fish and Wildlife Service  
 - Geological Survey  
 - National Park Service

**Department of Interior**

### STATE AGENCIES

Montana Conservation Districts  
 Montana Department of Fish and Game  
 Montana Department of Natural Resources and Conservation  
 Montana State University - Agricultural Experiment Station  
 University of Montana - School of Forestry  
 DNRC - State Forester

### PRIVATE ORGANIZATIONS

Montana Power Company  
 Butte Water Company  
 The Anaconda Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

# SNOW SURVEYS

DRAINAGE BASIN and SNOW COURSE	NAME	Elevation	THIS YEAR		PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)
FATTY CREEK	5500	3/29	67	30.3	20.9	24.8
FISH CREEK	8000	3/29	28	7.2	6.1	-
FISHER CREEK	9100	3/31	99	45.7	22.8	38.5
FISHER CREEK PILLOW	9100	3/31	SP	40.2	23.9	35.0
FIVE SPRINGS FALLS (WY)	7500	3/31	27	8.7	11.4	7.9
FLEECER RIDGE	7500	3/30	32	12.8	7.8	-
FOULHEN	8280	3/28	47	17.4	10.8	18.2
FOREST LAKE	6400	3/31	37	15.4	13.3	12.7
FOUR MILE	6900	3/28	23	7.6	5.4	9.1
FOURTH OF JULY	3450	3/27	28	8.9	3.8	-
FRED BURR PASS	8000	3/29	65	26.1	15.9	28.2
FRIDAY HILL	4620	3/27	42	18.4	11.6	-
FROHNER MEADOWS	6460	3/28	25	8.4	6.4	-
FROHNER MEADOWS PILLOW	6480	3/28	SP	9.9	6.9	-
GARVER CREEK	4250	3/28	27	9.8	4.9	12.8
GARVER CREEK PILLOW	4250	3/31	SP	9.1	6.7	10.4
GOAT MOUNTAIN	7000	4/02	34	12.5	4.8	11.8
GOLD CREEK LAKE	7200	3/27	43	15.8	8.4	17.1
GOLD STONE	8100	3/30	51	19.6	8.8	17.9
GRASSHOPPER	7000	3/27	24	8.4	6.8	5.9
GRAVE CREEK	4300	3/27	40	17.3	9.3	19.4
GRAVE CREEK PILLOW	4300	3/27	SP	16.3	10.4	-
GRIFFIN CREEK DIVIDE	5150	3/29	27	11.0	6.6	12.4
GRIZZLY PEAK	8400	3/30	36	11.0	12.8	17.5
HALVERSON CREEK (IO)	4850	3/29	91	40.8	26.5	50.7
HAND CREEK	5030	3/29	31	12.0	8.9	-
HAND CREEK PILLOW	5030	3/29	SP	12.8	8.2	-
HAWKINS LAKE	6450	3/28	65			



# SNOW SURVEYS

DRAINAGE BASIN and/or SNOW COURSE	NAME	THIS YEAR			PAST RECORD		
		Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
HEM MOUNTAIN	6000	3/31	42	17.2	8.3	20.1	
HEO TOP	5260	3/27	65	26.4	14.1	-	
ROCK CREEK	5600	3/24	41	13.9	16.7	10.2	
ROCK CREEK MEADOWS	8160	3/31	70	25.7	17.9	-	
ROCKER PEAK	8000	3/27	47	16.7	8.3	16.7	
ROCKER PEAK PILLOW	6000	3/27	SP	16.7	9.7	16.7	
ROCKY BOY	4700	3/28	23	7.8	6.4	4.7	
ROCKY BOY PILLOW	4700	3/28	SP	8.5	3.0	5.1	
SACAJAWEA	6550	3/30	47	21.0	16.0	15.3	
SAUOLE MOUNTAIN	7940	3/29	SP	30.1	13.0	28.2	
SAUOLE MOUNTAIN PILLOW	8710	3/30	90	37.8	13.7	35.3	
SATELL MOUNTAIN (10)	8300	3/30	68	28.6	13.2	24.6	
SENTINEL CREEK	8100	3/29	72	29.3	24.0	26.1	
SHOWER FALLS	8100	3/29	SP	25.9	22.6	26.3	
SHOWER FALLS PILLOW	8100	3/29	2	8	5.9	-	
SILVER RUN	6630	4/01	SP	27.6	14.6	27.4	
SKALKAHO SUMMIT	7260	3/28	64	27.6	14.6	-	
SKALKAHO SUMMIT PILLOW	7260	3/28	SP	29.3	11.4	-	
SLAG-A-MELT LAKE	8750	3/28	74	30.8	11.9	27.8	
SLIDE ROCK MOUNTAIN	7100	3/28	44	16.9	12.2	18.0	
SMUGGLER MINE	6960	3/30	32	12.3	5.7	11.1	
SOUTH FORK SHIELDS	8100	3/29	72	30.2	26.8	26.1	
SPUD PARK	8000	3/30	66	26.9	18.6	23.8	
STAHL PEAK	6050	3/27	94	40.5	24.2	41.4	
STAHL PEAK PILLOW	6050	3/27	SP	34.2	20.2	-	
STAK LAKE E	9650	4/03	105	46.0A	27.0	-	
STEAMBOAT POINT (WY)	7500	3/29	27	7.7	13.3	9.2	
STAMPLE PASS	6600	3/28	35	11.9	8.8	11.4	
STUHM LAKE	7780	3/28	42	16.4	9.6	15.0	
STRYKER BASIN	6180	3/28	77	32.4	20.4	-	
STUART MILL	6500	3/31	0	0	5.2	7.5	
SUCKER CREEK	3960	3/26	0	1.6	-	-	
SUGARLOAF	7350	3/31	20	7.6	8.2	-	
TARGHEE PASS (10)	7000	3/30	37	15.4	6.1	16.2	
TAYLOR PEAKS	8500	3/24	65	24.3	-	-	
TAYLOR PEAKS PILLOW	8500	3/24	SP	20.9	12.7	18.5	
TAYLOR ROD	4080	3/28	17	6.8	5.0	-	
TEN MILE LOWER	6600	3/27	21	6.6	6.2	7.8	
TEN MILE MIDDLE	6800	3/27	37	12.7	7.6	12.6	
TEN MILE UPPER	8000	3/27	40	15.8	8.8	15.0	
TEPEL CREEK	8000	3/31	50	18.2	7.0	16.4	
TEPEE CREEK PILLOW	8000	3/31	SP	15.2	6.1	-	
THUMB DIVIDE (WY)	7900	3/29	52	20.8	6.8	22.2	
TIMBERLINE CREEK	6850	4/01	34	9.8	9.6	16.1	
TRAIL CREEK	7090	3/26	32	9.8	4.4	9.0	
TV MOUNTAIN	6800	3/30	51	21.0	11.5	20.3	
TWELVE MILE CREEK	5600	3/30	46	19.8	14.4	21.1	
TWELVE MILE CREEK PILLOW	5600	3/30	SP	20.6	13.5	18.6	
TWENTY-ONE MILE	7150	3/29	48	20.5	7.8	17.9	
TWIN LAKES	6510	3/30	101	48.4	23.8	43.7	
TWIN LAKES PILLOW	6900	3/30	SP	44.9	24.3	42.7	
VALLEY VIEW (10)	5600	3/30	35	15.0	6.3	17.7	
WALDRON	5600	3/28	28	10.6	7.2	12.2	
WALDRON PILLOW	5600	3/28	SP	10.7	6.4	12.1	
WARM SPRINGS	8250	3/30	50	20.3	-	-	
WARM SPRINGS PILLOW	6250	3/30	SP	26.7	-	-	
WEASEL DIVIDE	5450	3/27	76	32.2	17.0	36.4	
WEST ROSEBUD	7500	3/22	32	10.2	-	12.4	
WEST YELLOWSTONE	6700	3/28	35	14.4	5.0	11.4	
WHISKEY CREEK	6800	3/28	SP	20.8	8.4	-	
WHISKEY CREEK PILLOW	6800	3/28	68	30.0	10.2	18.7	
WHITE ELEPHANT (10)	7700	3/30	68	30.0	10.2	-	
WHITE MILL	8700	3/31	83	34.2	15.8	27.7	
WHITE MILL PILLOW	8700	3/31	SP	32.5	16.0	-	
WHITE PINE RIDGE	6850	3/26	14	3.6	3.9	5.7	
WILLOW CREEK	6500	3/30	20	5.9	9.7	-	
WOLVERINE (WY)	7650	3/29	42	16.8	5.8	-	
WRONG CREEK	5700	3/31	32	13.3	7.1	16.2	
WRONG RIDGE	5600	3/31	50	20.9	11.5	22.0	

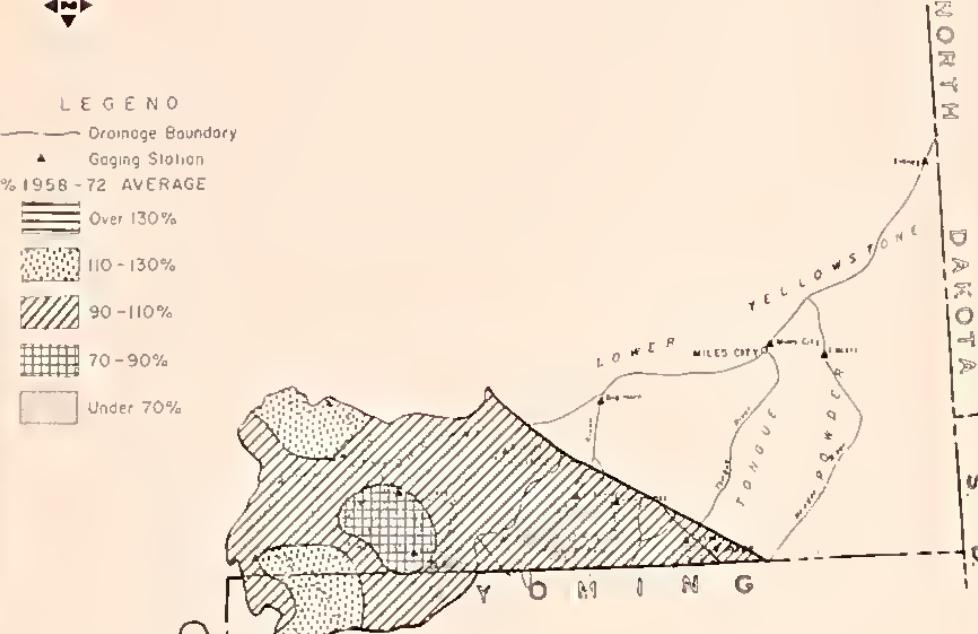
Average based on 1958-72 period. A - Aerial observation; water content estimated. SP - Snow Pillow observation; water content only.

DRAINAGE BASIN and/or SNOW COURSE	NAME	THIS YEAR			PAST RECORD		
		Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
LATE ARRIVING DATA							

DRAINAGE BASIN and/or SNOW COURSE	NAME	THIS YEAR			PAST RECORD		
		Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
Badger Pass							
Beaver Lake	6900	4/03	76	34.7	26.6	42.0	
Big Sky	7700	4/01	42	17.6	14.4	25.1	
Black Mountain	7750	4/04	41	15.6	10.8	-	
Blue Lake	5900	4/03	50	23.0	18.5	28.2	
Burgess R. 02 (WY)	7900	3/29	28	7.7	15.6	9.0	
Carter Creek	7400	4/02	14	3.4	4.7	6.4	
Cole Creek Pillow	7850	3/30	SP	10.6	15.0	-	
Dix Hill	6300	4/04	26	9.6	8.7	-	
East Entrance (WY)	7000	4/01	27	11.4	4.8	8.9	
Five Bull	5700	4/03	18	6.0	3.8	7.5	
Freight Creek	6000	4/03	37	15.0	11.8	16.8	
Gibbons Pass	7100	4/03	56	25.9	9.5	23.7	
Gunlight Lake	6300	4/03	86	41.8	27.8	42.9	
Holbrook	4530	4/01	21	7.3	7.4	10.5	
King Creek Saddle	4550	3/28	17	6.8	-	-	
King Springs	4150	3/30	15	5.5	-	-	
Lone Mountain	8880	4/01	58	24.9	16.0	25.1	
Lookout (ID)	5250	3/29	74	32.2	18.6	38.7	
Lupine (WY)	7300	4/03	29	10.0	5.4	10.3	
Mill Creek	7500	4/04	35	13.7	12.9	14.3	
Mission Mountain	5050	3/27	26	9.5	-	-	
Norris Basin (WY)	7500	4/03	29	11.9	6.1	11.0	
Northeast Entrance	7						

# Yellowstone River Drainage

Montana



## YELLOWSTONE RIVER DRAINAGE MONTANA MOUNTAIN SNOW WATER EQUIVALENT

### SOIL MOISTURE

RECENT SNOWMELT HAS IMPROVED SOIL MOISTURE IN MIDDLE AND LOWER ELEVATIONS. SOME DRYING OF SOILS IS STARTING IN LOWER ELEVATIONS.

### MOUNTAIN SNOWPACK

UPPER YELLOWSTONE - ABOVE AVERAGE IN AND NEAR YELLOWSTONE NATIONAL PARK. SOME MELT IN LOWER ELEVATIONS DURING THE LAST TWO WEEKS IN MARCH. BELOW AVERAGE SNOWFALL FOR THE PAST MONTH.

SHIELDS-SWEET GRASS-BIG TIMBER - GENERALLY ABOVE AVERAGE IN THE CRAZY MOUNTAINS AND NEAR TO ABOVE AVERAGE IN THE BRIDGER MOUNTAINS. SOME DEFICIENCIES IN THE LOWER ELEVATIONS AS A RESULT OF MELT THE LAST HALF OF MARCH.

BOULDER-STILLWATER - ABOVE AVERAGE IN THE HIGHER ELEVATION HEADWATERS AND NEAR AVERAGE IN THE REMAINDER OF THE BOULDER RIVER DRAINAGE. SOME DEFICIENCIES IN THE STILLWATER ALONG THE NORTH-EAST SLOPE OF THE BEARTOOTH MOUNTAINS.

ROCK CREEK-CLARK'S FORK - ABOVE AVERAGE IN HEADWATERS OF CLARK'S FORK AND NEAR AVERAGE ELSEWHERE. BELOW AVERAGE IN RED LODGE CREEK AND PARTS OF ROCK CREEK DRAINAGES. SOME MELT IN LOWER ELEVATIONS FROM WARMER THAN NORMAL TEMPERATURES THE LAST TWO WEEKS OF MARCH. LITTLE SNOWFALL DURING MARCH.

### SUMMARY OF SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

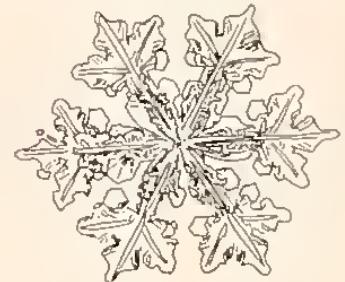
RIVER BASIN AND OR SUB-BASIN	Number of Courses Assessed	THIS YEAR'S SNOW WATER AS PERCENT OF LAST YEAR Average
Upper Yellowstone ab Livingston	11	197 116
Shields	7	124 115
Boulder & Stillwater	2	145 101
Rock Creek & Clark's Fork	6	164 102
Yellowstone (ab Big Horn River)	26	160 111
Big Horn/Wyoming	20	161 99
Little Big Horn	4	76 102
Big Horn (Total)	31	181 101
Tongue	5	70 92
Powder	3	108 98
Yellowstone (Total)	61	151 106

BIGHORN - GENERALLY NEAR OR ABOVE AVERAGE IN THE WYOMING HEADWATERS.

LITTLE BIGHORN - A LITTLE ABOVE AVERAGE IN HIGHER ELEVATIONS. SOMEWHAT BELOW AVERAGE IN LOWER ELEVATIONS AS A RESULT OF MELT DURING THE LAST OF MARCH.

TONGUE - AVERAGE TO A LITTLE BELOW IN HIGHER ELEVATIONS. BELOW AVERAGE IN LOWER ELEVATIONS. MUCH OF THE PRAIRIE SNOWPACK HAS MELTED.

POWDER - NEAR AVERAGE IN HIGHER ELEVATIONS AND BELOW AVERAGE IN LOWER ELEVATIONS. MELT IN LAST HALF OF MARCH HAS GREATLY REDUCED THE PRAIRIE SNOWPACK.



### STREAMFLOW FORECASTS

UPPER YELLOWSTONE - ABOUT 10 PERCENT ABOVE AVERAGE RUNOFF FOR APRIL THROUGH SEPTEMBER PERIOD.

SHIELDS-SWEET GRASS - ABOVE AVERAGE RUNOFF.

BOULDER-STILLWATER - ABOVE AVERAGE FLOW FROM BOULDER RIVER WITH NEAR AVERAGE RUNOFF FOR THE STILLWATER RIVER. BELOW AVERAGE RUNOFF FROM SMALLER STREAMS WITH LOWER ELEVATION HEADWATERS.

ROCK CREEK-CLARK'S FORK - GENERALLY ABOVE AVERAGE RUNOFF. BELOW AVERAGE FOR RED LODGE-WILLOW CREEK DRAINAGES AND OTHER SMALLER STREAMS THAT DO NOT HAVE

HEADWATERS EXTENDING INTO THE MAIN BEARTOOTH MOUNTAIN RANGE.

YELLOWSTONE RIVER - STREAMFLOW FOR THE YELLOWSTONE RIVER BELOW LIVINGSTON IS FORECAST AT ABOUT 10 PERCENT OF AVERAGE. STREAMFLOW IS EXPECTED TO HOLD UP WELL INTO THE IRRIGATION SEASON.

BIGHORN - ABOVE AVERAGE INFLOW TO YELLOWTAIL RESERVOIR.

LITTLE BIGHORN - NEAR TO A LITTLE BELOW AVERAGE RUNOFF FROM SNOWMELT IN THE BIGHORN MOUNTAINS.

TONGUE-POWDER - AVERAGE TO A LITTLE ABOVE AVERAGE RUNOFF FROM MOUNTAIN SNOWMELT.

### WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" with Respect to Usual Supply

STREAMFLOW AREA	Flow Period	
	Spring Season	Summer Season
Yellowstone above Livingston	Ex	Ex
Shields	Ex	Ex
Boulder	Ex	Ex
Sweetgrass-Big Timber	Ex	Ex
Stillwater	Avg	Avg
Rock Creek	Avg	Avg
Clark's Fork	Ex	Ex
Yellowstone above Big Horn	Ex	Ex
Big Horn	Avg	Avg
Little Big Horn	Avg	Avg
Tongue	Avg	Avg
Powder	Avg	Avg
Lower Yellowstone	Ex	Ex

### IRRIGATION WATER SUPPLIES

GENERALLY AVERAGE OR ABOVE LATE SEASON WITH ABUNDANT SUPPLIES DURING THE MAIN SNOWMELT PERIOD. SOME DEFICIENT SUPPLIES ARE EXPECTED FROM DIRECT STREAMFLOW DIVERSIONS IN RED LODGE CREEK DRAINAGE.

BASIN STREAM AND FORECAST POINT	April-September				April-July			
	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST	THOUSAND ACRE FEET	LATE FEET	EARLY	FORECAST	THOUSAND ACRE FEET	LATE FEET	EARLY
YELLOWSTONE RIVER at Corwin Springs	2,170	109	1,129	1,996	1,820	110	942	1,662
YELLOWSTONE RIVER near Livingston	2,500	108	2,317	2,090	109			1,926
BOULDER RIVER at Big Timber	425	112	379	400	114			350
STILLWATER RIVER near Absarokee (1)	590	100	591	490	99			494
CLARK'S FORK RIVER near Belfry	705	116	607	635	116			546
ROCK CREEK near Red Lodge	122	111	61.0	110	94.0	113	45.0	84.0
INFLOW COONEY RESERVOIR near Boyd (2)	36.0	70	51.5	29.0	71			41.1
YELLOWSTONE RIVER at Billings	4,600	108	2,178	4,246	1,950	109	1,822	3,613
BIG HORN RIVER near St. Xavier (3)	2,100	114	618	1,849	1,950	114	559	1,706
LITTLE BIG HORN RIVER near Lodgegrass (4)	140	96	146	125	97			129
YELLOWSTONE RIVER at Miles City (5)	6,750	106	6,378	6,050	109			5,555
YELLOWSTONE RIVER near Sidney (5)	7,150	106	6,665	6,450	109			5,895

(1) Adjusted for storage in Mystic Lake.  
 (2) Sum of Red Lodge Creek above reservoir and Willow Creek near Boyd.  
 (3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake and Big Horn.

(4) Sum Little Big Horn below Pass Creek and Lodgegrass Creek near Wyola.  
 (5) Adjusted for storage in Buffalo Bill, Boysen and Yellowtail Reservoirs.

Average base on 1958-72 period.

